

**FACSIMILE TRANSMISSION****Date:** June 16, 2008**Facsimile Number:** 571-270-4241**To:** Commissioner for Patents
Attn: Examiner Akram
Art Unit: 1795**From:** James D. Withers**W&K File No.** 10002.0052US1

Total Number of Pages (including this page): 11

Re: U.S. Patent Application Serial No. 10/807,655

Please see the attached amended claim set that can be discussed during our 11 am EST telephone conference tomorrow morning.

If you have any questions, please call me at 678-485-8324 (cell).

Thank you,
James Withers**ATTORNEY CLIENT PRIVILEGED DOCUMENT**

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Patents

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)
Rakow et al.) Art Unit: 1743
Serial No.: 10/807,655) Examiner: Akram, I.
Filed: March 24, 2004) Atty. Docket No.: 57968US004

For: COLORIMETRIC SENSOR

AMENDMENT AND RESPONSE UNDER 37 C.F.R. §1.116

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the non-final Office Action mailed on September 24, 2007, Applicants request further examination under 37 C.F.R. § 1.116 in light of the following amendments and remarks, which are believed to place the application in condition for allowance.

Please amend the claims as follows:

I hereby certify that this correspondence is being electronically transmitted to the United States Patent & Trademark Office (USPTO) using the USPTO's e-filing procedure on June 18, 2008.

/James D. Withers/
James D. Withers - Reg. No. 40,376

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

In The Claims:

Please replace the previously presented claim set with the following replacement claim set:

1. (Currently Amended) A colorimetric sensor for measuring one or both of the presence and concentration of an analyte, said colorimetric sensor comprising:

a reflective layer;

a detection layer over the reflective layer, the detection layer comprising at least one polymer component, said detection layer being capable of a change in optical thickness upon exposure to said the analyte; and

a semi-reflective layer over the detection layer, the semi-reflective layer having an index of refraction different from the index of refraction of the detection layer, wherein at least a portion of (i) the semi-reflective layer, (ii) the reflective layer, or (iii) both (i) and (ii) is permeable to said the analyte;

wherein the detection layer comprises a porous detection layer comprising at least one polymer having an intrinsic microporosity.

2. (Previously Presented) The colorimetric sensor of claim 1, wherein the reflective layer and the semi-reflective layer independently comprise a metal.

3. (Currently Amended) The A colorimetric sensor of claim 1 for measuring one or both of the presence and concentration of an analyte, said colorimetric sensor comprising:

a reflective layer;

a detection layer over the reflective layer, the detection layer comprising at least one polymer component, said detection layer being capable of a change in optical thickness upon exposure to the analyte; and

a semi-reflective layer over the detection layer, the semi-reflective layer having an index of refraction different from the index of refraction of the detection layer, wherein at least a portion of (i) the semi-reflective layer, (ii) the reflective layer, or (iii) both (i) and (ii) is

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

permeable to the analyte,

wherein the semi-reflective layer is a substantially continuous layer.

4. (Previously Presented) The colorimetric sensor of claim 1, wherein the semi-reflective layer has a differential permeability such that the semi-reflective layer has a higher analyte permeability at a first location on an upper surface of the semi-reflective layer and a lower analyte permeability at a second location on the upper surface.

5. (Original) The colorimetric sensor of claim 4, wherein the first and second locations form a pattern on the upper surface of the semi-reflective layer.

6. (Previously Presented) The colorimetric sensor of claim 1, wherein the detection layer comprises a pattern of wells beneath a lower surface of the semi-reflective layer and extending a depth into the detection layer.

7. (Original) The colorimetric sensor of claim 3, wherein the semi-reflective layer comprises a single layer of semi-reflective material on an outer surface of the detection layer opposite the reflective layer.

8. (Original) The colorimetric sensor of claim 7, wherein the reflective layer comprises a single layer of reflective material.

9. (Previously Presented) The colorimetric sensor of claim 1, wherein the detection layer further comprises an inorganic material, said inorganic material being (i) blended with the at least one polymer component, (ii) within a given layer containing the at least one polymer component but not blended with the at least one polymer component, (iii) in a layer separate from the at least one polymer component, or (iv) any combination of (i) to (iii).

10. (Previously Presented) The colorimetric sensor of claim 1, wherein the sensor further

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

comprises a masking layer over at least a portion of the semi-reflective layer, said masking layer preventing (i) exposure of at least a portion of the semi-reflective layer to an analyte, and (ii) an exposure signal from the portion of the semi-reflective layer covered by said masking layer.

11. (Original) The colorimetric sensor of claim 10, wherein the masking layer is provided as a pattern over at least a portion of the semi-reflective layer.

12. (Previously Presented) The colorimetric sensor of claim 45, wherein the semi-reflective layer is a discontinuous layer comprising a single layer of semi-reflective islands having at least one dimension greater than 10 μm , and exposed areas between the semi-reflective islands, said exposed areas having a width of at least 1.0 μm .

13. (Previously Presented) The colorimetric sensor of claim 45, wherein the semi-reflective layer is a discontinuous layer comprising a single layer of semi-reflective islands, and the detection layer contains wells extending a depth into the detection layer.

14. (Previously Presented) The colorimetric sensor of claim 45, wherein the semi-reflective layer is a discontinuous layer comprising a single layer of semi-reflective islands, and the detection layer comprises an inorganic material.

15. (Currently Amended) The colorimetric sensor of claim 14, wherein said inorganic material (i) is blended with the at least one polymer component, (ii) is within a given layer containing the at least one polymer component but not blended with the at least one polymer component, (iii) is in a layer separate from the at least one polymer component, or (iv) any combination of (i) to (iii).

16. (Previously Presented) The colorimetric sensor of claim 45, wherein the semi-reflective layer is a discontinuous layer, and the detection layer comprises at least two different polymeric components, wherein the polymeric components are (1) blended with one another, (2) within a

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

given layer but not blended with one another, (3) in a layer separate from one another, or (4) any combination of (1) to (3).

17-18. (Canceled)

19. (Original) The colorimetric sensor of claim 1, wherein the detection layer comprises two or more polymer components and wherein the optical thickness of each polymer component changes in the presence of a different analyte.

20. (Original) The colorimetric sensor of claim 1, wherein the detection layer comprises at least two polymers and wherein the optical thickness of only one polymer changes in the presence of an analyte.

21. (Original) The colorimetric sensor of claim 20, wherein the at least two polymers are arranged such that a visible pattern forms when the sensor is exposed to the analyte.

22. (Original) The colorimetric sensor of claim 1, wherein the detection layer has a first thickness in a first location of the detection layer and a second thickness in a second location of the detection layer, said second thickness being different from said first thickness.

23. (Original) The colorimetric sensor of claim 1, wherein at least a portion of the reflective layer is permeable to said analyte.

24. (Original) The colorimetric sensor of claim 1, wherein said sensor is substantially free of said analyte, and either (i) displays a first color or (ii) is colorless when viewed through the semi-reflective layer.

25. (Original) An analyte-containing colorimetric sensor comprising:

the colorimetric sensor of claim 1, and

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

at least one analyte in contact with the detection layer of the sensor, wherein the analyte-containing colorimetric sensor either (i) displays a second color that is different from a first color displayed by the colorimetric sensor prior to exposure to said analyte, (ii) undergoes a color change from said first color to a colorless condition upon exposure to said analyte, or (iii) undergoes a color change from being colorless to a color-containing condition upon exposure to said analyte.

26. (Original) The colorimetric sensor of claim 1, wherein said sensor is substantially free of biological material between said reflective layer and said semi-reflective layer.

27. (Original) The colorimetric sensor of claim 1, further comprising molecular receptors in the detection layer.

28. (Original) The colorimetric sensor of claim 27, wherein the molecular receptors are selected from the group consisting of calixarenes, cyclodextrins, dendritic polymers, carbon nanotubes, azacrowns, crown ethers, anion chelating agents containing Lewis acid functionality, organometallic metal complexes, porphyrins, metalloporphyrins, peptides, glycopeptides, proteins, antibodies, enzymes, oligonucleotides, nucleic acids, and combinations thereof.

29. (Original) An array comprising two or more of the colorimetric sensors of claim 1.

30. (Original) The array of claim 29, wherein at least two colorimetric sensors in the array have (i) different detection layer chemistries, (ii) different molecular receptors within separate detection layers, (iii) different detection layer pore size distributions, (iv) different detection layer thicknesses, or (v) any combination of (i) to (iv).

31. (Original) The array of claim 29, wherein each colorimetric sensor in the array shares a common reflective layer and comprises a multi-layered film island comprising a stack of layers including (i) a detection layer with a detection layer composition and (ii) a semi-reflective layer

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

with a semi-reflective layer composition.

32. (Original) A device comprising:

the colorimetric sensor of claim 1, and

a housing at least partially enclosing the colorimetric sensor, wherein the housing comprises at least one opening positioned above the semi-reflective layer, said at least one opening providing a restricted view of an upper surface of the semi-reflective layer.

33. (Original) The device of claims 32, wherein the restricted view allows a view of the upper surface of the semi-reflective layer within an angle of $\pm 30^\circ$ from a normal view.

34. (Original) A device comprising the colorimetric sensor of claim 1 and a light source.

35. (Original) The device of claim 34, further comprising a photo-detector.

36-42. (Canceled)

43. (Previously Presented) An array comprising two or more of the colorimetric sensors for measuring one or both of the presence and concentration of an analyte, said two or more colorimetric sensors each independently comprise:

a reflective layer;

a detection layer over the reflective layer, the detection layer comprising (i) at least one polymer component, (ii) at least one inorganic component, or (iii) both (i) and (ii); and

a semi-reflective layer over the detection layer, the semi-reflective layer having an index of refraction different from the index of refraction of the detection layer and being permeable to said analyte, said sensor being capable of a change in color upon exposure to said analyte;

wherein each of the two or more colorimetric sensors in the array shares a common reflective layer and comprises a multi-layered film island comprising a stack of layers including

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

(i) a detection layer with a detection layer composition and (ii) a semi-reflective layer with a semi-reflective layer composition.

44. (Canceled)

45. (Currently Amended) A colorimetric sensor for measuring one or both of the presence and concentration of an analyte, said colorimetric sensor comprising:

a reflective layer;

a detection layer over the reflective layer, the detection layer comprising at least one polymer component; and

a discontinuous semi-reflective layer over the detection layer, the semi-reflective layer having an index of refraction different from the index of refraction of the detection layer, said sensor being capable of a change in color upon exposure to said the analyte,

wherein the sensor has at least one of the following features:

(a) the discontinuous semi-reflective layer comprises a single layer of semi-reflective islands having at least one dimension greater than 10 µm, and exposed areas between the semi-reflective islands, said exposed areas having a width of at least 1.0 µm;

(b) the discontinuous semi-reflective layer comprises a single layer of semi-reflective islands and the detection layer contains wells extending a depth into the detection layer;

(c) the discontinuous semi-reflective layer comprises a single layer of semi-reflective islands and the detection layer comprises at least one inorganic component either alone or in combination with the at least one polymer component;

(d) the detection layer comprises at least one inorganic component, wherein said at least one inorganic component is (i) blended with the at least one polymer component, (ii) within a given layer containing the at least one polymer component but not blended with the at least one polymer component, (iii) in a layer separate from a layer containing the at least one polymer component, or (iv) any combination of (i) to (iii); and

(e) the detection layer comprises at least two different polymeric components, wherein the polymeric components are (1) blended with one another, (2) within a given layer but

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

not blended with one another, (3) in a layer separate from one another, or (4) any combination of (1) to (3).

46. (Original) An array comprising two or more of the colorimetric sensors of claim 45.

47. (Original) The array of claim 46, wherein each colorimetric sensor in the array shares a common reflective layer and comprises a multi-layered film island comprising a stack of layers including (i) a detection layer with a detection layer composition and (ii) a semi-reflective layer with a semi-reflective layer composition.

48. (Previously Presented) The colorimetric sensor of claim 1, wherein the reflective layer is a substantially continuous layer.

49. (Previously Presented) The colorimetric sensor of claim 1, wherein the detection layer further comprises an inorganic material.

50. (Previously Presented) The colorimetric sensor of claim 1, wherein the detection layer comprises at least two different polymeric components, wherein the polymeric components are (1) blended with one another, (2) within a given layer but not blended with one another, (3) in a layer separate from one another, or (4) any combination of (1) to (3).

51. (Previously Presented) The colorimetric sensor of claim 3, wherein the reflective layer is permeable to said analyte.

52. (Previously Presented) The colorimetric sensor of claim 4, wherein the semi-reflective layer is a substantially continuous layer.

53. (Currently Amended) The colorimetric sensor of claim ~~47~~ 1, wherein the semi-reflective layer is a substantially continuous layer, and the reflective layer is permeable to said analyte.

Amendment and Response Under 37 C.F.R. § 1.116
Serial No. 10/807,655

54. (Previously Presented) The array of claim 29, wherein at least one colorimetric sensor in the array comprises a molecular receptor in the detection layer of the at least one colorimetric sensor.

55. (Previously Presented) The array of claim 43, wherein each multi-layered film island comprises (i) the same detection layer composition and (ii) the same semi-reflective layer composition.